In the Claims

Amendments to the Claims:

1. (currently amended) A method of forming a substantially planar surface of an

optical waveguide device, comprising the steps:

forming at least one waveguide core portion within at least one cladding

portion; the waveguide core portion having an upper surface; the cladding

portion having a higher portion over at least the waveguide core portion and a

lower portion;

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forming a patterned sacrificial portion over the lower cladding portion and a

portion of the higher cladding portion, leaving a second portion of the higher

cladding portion exposed;

removing at least a portion of the exposed second portion of the higher

cladding exposed portion by a selective removal process selective to the

patterned sacrificial portion leaving a remnant of the exposed second portion of

the higher cladding exposed portion;

planarizing:

the remnant of the exposed second portion of the higher cladding

exposed portion over the waveguide core portion; and

the lower cladding portion;

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to form a planarized a predetermined thickness over the upper surface of the

waveguide core portion and the upper surface of the cladding portion coplanar

with the smooth upper surface of the waveguide core portion;

to form the substantially planar surface of an optical waveguide device.

2. (currently amended) The method of claim 1, wherein the predetermined

planarized cladding portion has a thickness is of between about 0 and 200 nm

above the upper surface of the waveguide core portion.

3. (original) The method of claim 1, wherein the cladding portion has a first index

of refraction; the waveguide core portion has a second index of refraction; and

the waveguide core portion second index of refraction is greater than the

cladding portion first index of refraction.

4. (original) The method of claim 1, wherein the planarization is a chemical

mechanical polishing process.

5. (original) The method of claim 1, wherein the waveguide core portion

comprises at least one waveguide core embedding within at least another

waveguide core.

6. (original) The method of claim 1, wherein the patterned sacrificial portion is

comprised of:

photoresist: or

photoresist stacked upon a film comprised of: silicon nitride, silicon

oxynitride organic silicate glass, diamond like carbon, silicon dioxide, polyimide,

PMMA, tantalum, tungsten or molybdenum.

7. (original) The method of claim 1, wherein the cladding portion is comprised of

silicon nitride, organic silicate glass, silicon dioxide, polyimide or PMMA.

8. (original) The method of claim 1, wherein the selective removal process

selective to the patterned sacrificial portion is a dry and/or wet etching process.

9. (original) The method of claim 1, wherein the patterned sacrificial portion is

removed before the planarization.

10. (original) The method of claim 1, wherein the sacrificial portion is photoresist

and the patterned sacrificial photoresist portion is removed before the

planarization by a stripping process.

11. (original) The method of claim 1, wherein the waveguide core portion is

formed using a first mask; and the patterned sacrificial portion is patterned from

a sacrificial layer using a second mask that is the reverse of the first mask.

12. (currently amended) The method of claim 1, wherein the planarization also

removes the any remaining patterned sacrificial portion protruding remnant.

13. (original) The method of claim 1, wherein waveguide core portion is formed

using a first mask; and not all the sacrificial portion area is needed to be

patterned using a second mask that is the reverse of the first mask.

14. (original) The method of claim 1, wherein the patterned sacrificial portion is

also removed during the planarization.

15. (original) The method of claim 1, wherein the planarization includes a fine

planarization process.

16. (currently amended) The method of claim 1, wherein the planarization of the

remnant of the exposed second portion of the higher cladding exposed portion

over the waveguide core portion and the lower cladding portion does not expose

the upper surface of the waveguide core portion.

Claims 17 to 57 (canceled)

58. (new) A method of forming a substantially planar surface of an optical

waveguide device, comprising the steps of:

forming at least one waveguide core portion within at least one cladding

portion; the waveguide core portion having an upper surface; the cladding

portion having a higher portion over at least the waveguide core portion and a

lower portion; and

planarizing at least the higher portion of the cladding portion to form a

planarized cladding portion coplanar with the upper surface of the waveguide

core portion;

wherein the waveguide core portion comprises at least one waveguide core

embedding within at least another waveguide core.

59. (new) The method of claim 58, further comprising the steps of:

forming a patterned sacrificial portion over the lower cladding portion

and a portion of the higher cladding portion, leaving a second portion of the

higher cladding portion exposed; and

removing at least a portion of the exposed second portion of the higher

cladding portion by a selective removal process selective to the patterned

sacrificial portion leaving a remnant of the exposed second portion of the higher

cladding portion.

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60. (new) The method of claim 59, whereby the planarization also planarizes

the remnant of the exposed second portion of the higher cladding portion

over the waveguide core portion; and

the lower cladding portion.

61. (new) The method of claim 58, wherein the planarized cladding portion has a

thickness of between about 0 and 200 nm above the upper surface of the

waveguide core portion.

62. (new) The method of claim 58, wherein the cladding portion has a first index

of refraction; the waveguide core portion has a second index of refraction; and

the waveguide core portion second index of refraction is greater than the

cladding portion first index of refraction.

63. (new) The method of claim 58, wherein the planarization is a chemical

mechanical polishing process.

64. (new) The method of claim 59, wherein the sacrificial portion is comprised of:

photoresist: or

photoresist stacked upon a film comprised of: silicon nitride, silicon oxynitride organic silicate glass, diamond like carbon, silicon dioxide, polyimide, PMMA, tantalum, tungsten or molybdenum.

65. (new) The method of claim 58, wherein the cladding portion is comprised of silicon nitride, organic silicate glass, silicon dioxide, polyimide or PMMA.

66. (new) The method of claim 59, wherein the selective removal process selective to the patterned sacrificial portion is a dry and/or wet etching process.

67. (new) The method of claim 59, wherein the patterned sacrificial portion is removed before the planarization.

68. (new) The method of claim 60, wherein the sacrificial portion is photoresist and the patterned sacrificial photoresist portion is removed before the planarization by a stripping process.

69. (new) The method of claim 59, wherein the waveguide core portion is formed using a first mask; and the patterned sacrificial portion is patterned from a sacrificial layer using a second mask that is the reverse of the first mask.

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70. (new) The method of claim 60, wherein the planarization also removes any

remaining patterned sacrificial portion.

71. (new) The method of claim 60, wherein waveguide core portion is formed

using a first mask; and not all the sacrificial portion area is needed to be

patterned using a second mask that is the reverse of the first mask.

72. (new) The method of claim 60, wherein the patterned sacrificial portion is also

removed during the planarization.

73. (new) The method of claim 58, wherein the planarization includes a fine

planarization process.

74. (new) The method of claim 59, wherein the planarization of the remnant of

the exposed second portion of the higher cladding portion over the waveguide

core portion and the lower cladding portion does not expose the upper surface of

the waveguide core portion.